Newzen Consultants Bangalore

NZ/QC/YPD/T&F-W3/2018-19/P1-W13

Date: 03-05-2018

TEST REPORT ON WET MIX MACADAM MIX

(GRADATION TEST)

Sub: To conduct Gradation test on Wet Mix Macadam (WMM) Mix.
{Project*: Pkg 1, 1.Improvement of drains and resurfacing to roads in SFS 208 area in ward no.03, Attur.
2.Improvement of drains and resurfacing to roads in SFS 407 area in ward no.03, Attur.
3.Improvement of drains and resurfacing to roads in SFS 707 area in ward no.03, Attur.
4.Improvement of drains and resurfacing to roads in Industrial area in ward no.03, Attur.
5.Improvement of Roads and drains in CHS 707 area in ward no.03, Attur.}
Ref.: Material testing/PMC/17-18,
Report Required for: Assistant Executive Engineer,
Yelahanka Project Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: Sri. BB Umesha (M/s SMLP Constructions & Asphalt).

TEST RESULTS

1. Gradation Test:

TABLE 1.1

Sieve Size mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Specified Limits as per MoRTH Specifications, V Revision-2013
53.00	100.00	100
45.00	97.45	95-100
26.50	---	-
22.40	73.87	60-80
11.20	55.34	40-60
4.75	32.33	25-40
2.36	29.56	15-30
0.600	17.12	8-22
0.075	3.65	0-5

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Newzen Consultants Bangalore

Date: 03-05-2018

TABLE 1.2

SL No	Test conducted	Test Results	Tests Conforms to IS 2386(Part I to IV)–1963 (Reaffirmed on 2002) & Requirements as per IS:383-1970 & M.o.R.T.H Specification, V Revision -2013.
1.	Aggregate Impact Value	**26.78 %**	Not more than 30.00 %
2.	Combined Flakiness and Elongation index, %	**27.59 %**	Not more than 35.0 %
3.	Water absorption, %	**0.76 %**	Not more than 2.0 %
4.	Plasticity Index, %	**NP**	Not more than 6.0 %

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Date: 03-05-2018

TABLE 1.2

SL No	Test conducted	Test Results	Tests Conforms to IS 2386(Part I to IV)–1963 (Reaffirmed on 2002) & Requirements as per IS:383-1970 & M.o.R.T.H Specification, V Revision -2013.
1.	Aggregate Impact Value	**26.78 %**	Not more than 30.00 %
2.	Combined Flakiness and Elongation index, %	**27.59 %**	Not more than 35.0 %
3.	Water absorption, %	**0.76 %**	Not more than 2.0 %
4.	Plasticity Index, %	**NP**	Not more than 6.0 %

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NZ/QC/YPD/T&F-W3/2018-19/P1-W14

Date: 05-05-2018

TEST REPORT ON WET MIX MACADAM MIX
(GRADATION TEST)

Sub: To conduct Gradation test on Wet Mix Macadam (WMM) Mix.
{Project*: Pkg 1, 1.Improvement of drains and resurfacing to roads in SFS 208 area in ward no.03, Attur.
2.Improvement of drains and resurfacing to roads in SFS 407 area in ward no.03, Attur.
3.Improvement of drains and resurfacing to roads in SFS 707 area in ward no.03, Attur.
4.Improvement of drains and resurfacing to roads in Industrial area in ward no.03, Attur.
5.Improvement of Roads and drains in CHS 707 area in ward no.03, Attur.}
Ref.: Material testing/PMC/17-18,
Report Required for: Assistant Executive Engineer,
Yelahanka Project Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: Sri. BB Umesha (M/s SMLP Constructions & Asphalt).

TEST RESULTS

1. Gradation Test:

TABLE 1.1

Sieve Size mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Specified Limits as per MoRTH Specifications, V Revision-2013
53.00	100.00	100
45.00	98.77	95-100
26.50	---	-
22.40	68.12	60-80
11.20	52.44	40-60
4.75	36.45	25-40
2.36	18.32	15-30
0.600	16.78	8-22
0.075	4.11	0-5

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Date: 05-05-2018

TABLE 1.2

SL No	Test conducted	Test Results	Tests Conforms to IS 2386(Part I to IV)–1963 (Reaffirmed on 2002) & Requirements as per IS:383-1970 & M.o.R.T.H Specification, V Revision -2013.
1.	Aggregate Impact Value	**23.44 %**	Not more than 30.00 %
2.	Combined Flakiness and Elongation index, %	**25.62 %**	Not more than 35.0 %
3.	Water absorption, %	**0.86 %**	Not more than 2.0 %
4.	Plasticity Index, %	**NP**	Not more than 6.0 %

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NZ/QC/YPD/T&F-W3/2018-19/P1-W15

Date: 07-05-2018

TEST REPORT ON WET MIX MACADAM MIX
(GRADATION TEST)

Sub: To conduct Gradation test on Wet Mix Macadam (WMM) Mix.

{Project*: Pkg 1, 1.Improvement of drains and resurfacing to roads in SFS 208 area in ward no.03, Attur.
2.Improvement of drains and resurfacing to roads in SFS 407 area in ward no.03, Attur.
3.Improvement of drains and resurfacing to roads in SFS 707 area in ward no.03, Attur.
4.Improvement of drains and resurfacing to roads in Industrial area in ward no.03, Attur.
5.Improvement of Roads and drains in CHS 707 area in ward no.03, Attur.}

Ref.: Material testing/PMC/17-18,

Report Required for: Assistant Executive Engineer,
Yelahanka Project Division,
BBMP, Bangalore.

Name of the Agency/Contractor*: Sri. BB Umesha (M/s SMLP Constructions & Asphalt).

TEST RESULTS

1. Gradation Test:

TABLE 1.1

Sieve Size mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Specified Limits as per MoRTH Specifications, V Revision-2013
53.00	100.00	100
45.00	95.42	95-100
26.50	---	-
22.40	73.17	60-80
11.20	48.44	40-60
4.75	27.78	25-40
2.36	18.57	15-30
0.600	15.23	8-22
0.075	2.98	0-5

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Date: 07-05-2018

TABLE 1.2

SL No	Test conducted	Test Results	Tests Conforms to IS 2386(Part I to IV)–1963 (Reaffirmed on 2002) & Requirements as per IS:383-1970 & M.o.R.T.H Specification, V Revision -2013.
1.	Aggregate Impact Value	**24.36 %**	Not more than 30.00 %
2.	Combined Flakiness and Elongation index, %	**28.52 %**	Not more than 35.0 %
3.	Water absorption, %	**0.91 %**	Not more than 2.0 %
4.	Plasticity Index, %	**NP**	Not more than 6.0 %

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NZ/QC/YPD/T&F-W3/2018-19/P1-W16

Date: 08-05-2018

TEST REPORT ON WET MIX MACADAM MIX

(GRADATION TEST)

Sub: To conduct Gradation test on Wet Mix Macadam (WMM) Mix.
{Project*: Pkg 1, 1.Improvement of drains and resurfacing to roads in SFS 208 area in ward no.03, Attur.
2.Improvement of drains and resurfacing to roads in SFS 407 area in ward no.03, Attur.
3.Improvement of drains and resurfacing to roads in SFS 707 area in ward no.03, Attur.
4.Improvement of drains and resurfacing to roads in Industrial area in ward no.03, Attur.
5.Improvement of Roads and drains in CHS 707 area in ward no.03, Attur.}
Ref.: Material testing/PMC/17-18,
Report Required for: Assistant Executive Engineer,
Yelahanka Project Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: Sri. BB Umesha (M/s SMLP Constructions & Asphalt).

TEST RESULTS

1. Gradation Test:

TABLE 1.1

Sieve Size mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Specified Limits as per MoRTH Specifications, V Revision-2013
53.00	100.00	100
45.00	99.10	95-100
26.50	---	-
22.40	77.43	60-80
11.20	53.45	40-60
4.75	36.81	25-40
2.36	22.90	15-30
0.600	16.65	8-22
0.075	2.87	0-5

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Newzen Consultants Bangalore

Date: 08-05-2018

TABLE 1.2

SL No	Test conducted	Test Results	Tests Conforms to IS 2386(Part I to IV)– 1963 (Reaffirmed on 2002) & Requirements as per IS:383-1970 & M.o.R.T.H Specification, V Revision -2013.
1.	Aggregate Impact Value	**26.89 %**	Not more than 30.00 %
2.	Combined Flakiness and Elongation index, %	**27.56 %**	Not more than 35.0 %
3.	Water absorption, %	**0.78 %**	Not more than 2.0 %
4.	Plasticity Index, %	**NP**	Not more than 6.0 %

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NZ/QC/YPD/T&F-W3/2018-19/P1-BD1 Date: 02-05-2018

1. TEST REPORT ON BITUMEN SAMPLE:

Sub: Testing of Bitumen sample VG-30 Grade used in Dense Graded Bituminous Macadam.
{Project*: Pkg 1, 1.Improvement of drains and resurfacing to roads in SFS 208 area in ward no.03, Attur.
2.Improvement of drains and resurfacing to roads in SFS 407 area in ward no.03, Attur.
3.Improvement of drains and resurfacing to roads in SFS 707 area in ward no.03, Attur.
4.Improvement of drains and resurfacing to roads in Industrial area in ward no.03, Attur.
5.Improvement of Roads and drains in CHS 707 area in ward no.03, Attur.}
Ref.: Material testing/PMC/17-18,
Report Required for: Assistant Executive Engineer,
Yelahanka Project Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: Sri. BB Umesha (M/s SMLP Constructions & Asphalt).Technical Reference: Ministry of Road Transport and Highways, V Revision, 2013 and IS 73: 1992.

TABLE 1.1 ;

SL No	Details	Test Results	Requirements as per I.S 73 –1992 Specifications
1.	Penetration at 25^0 C	**58.00^0 C**	Min. 45
2.	Ductility Value at 25^0 C	**121 cm**	40
3.	Flash point	**243^0 C**	Minimum 220^0 C
4.	Softening point	**54.65^0 C**	Min. 47

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NZ/QC/YPD/T&F-W3/2018-19/P1-CD1 Date: 02-05-2018

1. TEST REPORT ON COARSE AGGREGATE:

Sub: Testing of Coarse Aggregate used in Dense Graded Bituminous Macadam.

{Project*: Pkg 1, 1.Improvement of drains and resurfacing to roads in SFS 208 area in ward no.03, Attur.
2.Improvement of drains and resurfacing to roads in SFS 407 area in ward no.03, Attur.
3.Improvement of drains and resurfacing to roads in SFS 707 area in ward no.03, Attur.
4.Improvement of drains and resurfacing to roads in Industrial area in ward no.03, Attur.
5.Improvement of Roads and drains in CHS 707 area in ward no.03, Attur.}

Ref.: Material testing/PMC/17-18,

Report Required for: Assistant Executive Engineer,
Yelahanka Project Division,
BBMP, Bangalore.

Name of the Agency/Contractor*: Sri. BB Umesha (M/s SMLP Constructions & Asphalt).

TABLE 1.1 ;

SL No	Test conducted	Test Results	Tests Conforms to IS 2386(Part I to IV)–1963 (Reaffirmed on 2002) & Requirements as per IS:383-1970 & M.o.R.T.H Specification, V Revision -2013.
1.	Aggregate Impact Value	**26.27%**	Not more than 27.00 % for DBM
2.	Combined Flakiness and Elongation index, %	**28.23 %**	Not more than 35.0 %
3.	Water absorption, %	**0.49 %**	Not more than 2.0 %
4.	Specific gravity	**2.63**	------
5.	Soundness	**6.01 %**	Max. 12 % in Sodium Sulphate

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NZ/QC/YPD/T&F-W3/2018-19/P1-DM1

Date: 03-05-2018

1.TEST REPORT ON BITUMINOUS MIXES :

(BITUMEN EXTRACTION TEST & GRADATION TEST)

Sub: To determine the percentage of bitumen and gradation for DBM mix sample.

{Project*: Pkg 1, 1.Improvement of drains and resurfacing to roads in SFS 208 area in ward no.03, Attur.
2.Improvement of drains and resurfacing to roads in SFS 407 area in ward no.03, Attur.
3.Improvement of drains and resurfacing to roads in SFS 707 area in ward no.03, Attur.
4.Improvement of drains and resurfacing to roads in Industrial area in ward no.03, Attur.
5.Improvement of Roads and drains in CHS 707 area in ward no.03, Attur.}

Ref.: Material testing/PMC/17-18,

Report Required for: Assistant Executive Engineer,
Yelahanka Project Division,
BBMP, Bangalore.

Name of the Agency/Contractor*: Sri. BB Umesha (M/s SMLP Constructions & Asphalt).

TEST RESULTS

A. Type of Construction : **Dense Graded Bituminous Macadam.**

1. The bitumen content obtained after subjecting the sample for Bitumen Extraction test = **4.54 %**

2. **Gradation Test**

TABLE 1.1

Sieve Size, mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Gradation requirement as per Table 500-10 of MORTH Specfications-2013 DBM (Grading - 2)
37.5	100	100
26.5	96.76	90-100
19.0	89.78	71-95
13.20	76.65	56-80
4.75	49.25	38-54
2.36	37.34	28-42
0.300	18.23	7-21
0.075	6.90	2-8

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Newzen Consultants Bangalore

NZ/QC/YPD/T&F-W3/2018-19/P1-DS1

Date: 04-05-2018

1.TEST REPORT ON BITUMINOUS MIXES :

(STABILITY OF BITUMINOUS MIX)

Sub: To determine the stability of bituminous mix for DBM mix sample.

{Project*: Pkg 1, 1.Improvement of drains and resurfacing to roads in SFS 208 area in ward no.03, Attur.
2.Improvement of drains and resurfacing to roads in SFS 407 area in ward no.03, Attur.
3.Improvement of drains and resurfacing to roads in SFS 707 area in ward no.03, Attur.
4.Improvement of drains and resurfacing to roads in Industrial area in ward no.03, Attur.
5.Improvement of Roads and drains in CHS 707 area in ward no.03, Attur.}

Ref.: Material testing/PMC/17-18,

Report Required for: Assistant Executive Engineer,
Yelahanka Project Division,
BBMP, Bangalore.

Name of the Agency/Contractor*: Sri. BB Umesha (M/s SMLP Constructions & Asphalt).

TEST RESULTS

Table 1: Properties of DBM (Gr-2) Mix

Sl. No.	Test Property	*Test results obtained by Marshall method	Requirements of Dense Bituminous Macadam, Grade-2 as per M.o.R.T&H (V Revision)-2013 Specifications
1	Marshall Stability (75 blows) (At 60°C), kgs.	**1215**	900
2	Marshall Flow at 60°C, mm.	**3.76**	2.0 - 4.0

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NZ/QC/YPD/T&F-W3/2018-19/P1-DM2

Date: 04-05-2018

1.TEST REPORT ON BITUMINOUS MIXES :

(BITUMEN EXTRACTION TEST & GRADATION TEST)

Sub: To determine the percentage of bitumen and gradation for DBM mix sample.

{Project*: Pkg 1, 1.Improvement of drains and resurfacing to roads in SFS 208 area in ward no.03, Attur.
2.Improvement of drains and resurfacing to roads in SFS 407 area in ward no.03, Attur.
3.Improvement of drains and resurfacing to roads in SFS 707 area in ward no.03, Attur.
4.Improvement of drains and resurfacing to roads in Industrial area in ward no.03, Attur.
5.Improvement of Roads and drains in CHS 707 area in ward no.03, Attur.}

Ref.: Material testing/PMC/17-18,

Report Required for: Assistant Executive Engineer,
Yelahanka Project Division,
BBMP, Bangalore.

Name of the Agency/Contractor*: Sri. BB Umesha (M/s SMLP Constructions & Asphalt).

TEST RESULTS

A. Type of Construction : **Dense Graded Bituminous Macadam.**

1. The bitumen content obtained after subjecting the sample for Bitumen Extraction test = **4.51 %**

2. **Gradation Test**

TABLE 1.1

Sieve Size, mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Gradation requirement as per Table 500-10 of MORTH Specfications-2013 DBM (Grading - 2)
37.5	100	100
26.5	96.23	90-100
19.0	89.67	71-95
13.20	76.46	56-80
4.75	49.12	38-54
2.36	34.67	28-42
0.300	17.23	7-21
0.075	6.65	2-8

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NZ/QC/YPD/T&F-W3/2018-19/P1-DS2

Date: 05-05-2018

1.TEST REPORT ON BITUMINOUS MIXES :
(STABILITY OF BITUMINOUS MIX)

Sub: To determine the stability of bituminous mix for DBM mix sample.

{Project*: Pkg 1, 1.Improvement of drains and resurfacing to roads in SFS 208 area in ward no.03, Attur.
2.Improvement of drains and resurfacing to roads in SFS 407 area in ward no.03, Attur.
3.Improvement of drains and resurfacing to roads in SFS 707 area in ward no.03, Attur.
4.Improvement of drains and resurfacing to roads in Industrial area in ward no.03, Attur.
5.Improvement of Roads and drains in CHS 707 area in ward no.03, Attur.}

Ref.: Material testing/PMC/17-18,

Report Required for: Assistant Executive Engineer,
Yelahanka Project Division,
BBMP, Bangalore.

Name of the Agency/Contractor*: Sri. BB Umesha (M/s SMLP Constructions & Asphalt).

TEST RESULTS

Table 1: Properties of DBM (Gr-2) Mix

Sl. No.	Test Property	*Test results obtained by Marshall method	Requirements of Dense Bituminous Macadam, Grade-2 as per M.o.R.T&H (V Revision)-2013 Specifications
1	Marshall Stability (75 blows) (At 60°C), kgs.	**1245**	900
2	Marshall Flow at 60°C, mm.	**3.15**	2.0 - 4.0

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